

Figure 1 : Metabolic pathway of cysteine and derivatives glutathione and methionine

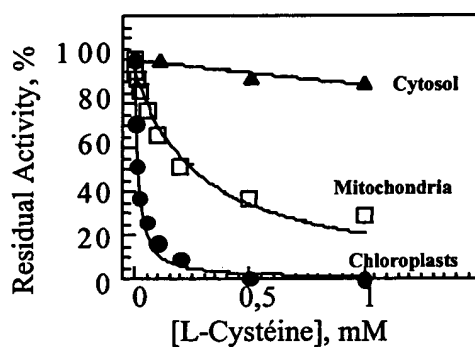


Figure 2 : Effect of cysteine on the activity of serine acetyltransferases from pea (*Pisum sativum*)

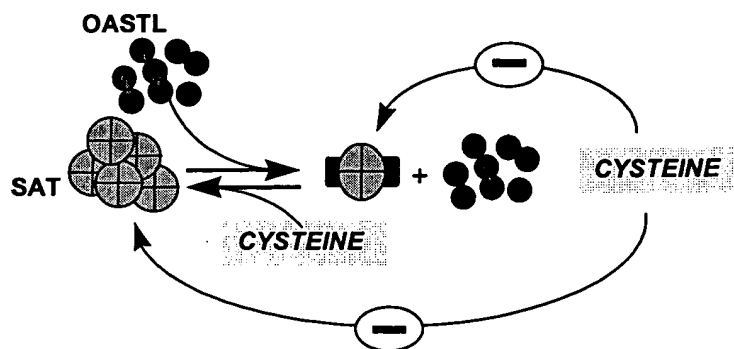


Figure 3 : Model of inhibition of chloroplast serine acetyltransferase



M	A	T	C	I	D	T	C	R	T	G	N	T	Q	D	D	16
ATG	GCA	ACA	TGC	ATA	GAC	ACA	TGC	CGA	ACC	GGT	AAT	ACC	CAA	GAC	GAT	48
D	S	R	F	C	C	I	K	N	F	F	R	P	G	F	S	32
GAT	TCC	CGG	TTC	TGT	TGC	ATC	AAG	AAT	TTC	TTT	CGA	CCC	GGT	TTC	TCT	96
V	N	R	K	I	H	H	T	Q	I	E	D	D	D	D	V	48
GTA	AAC	CGG	AAG	ATT	CAC	CAC	ACC	CAA	ATC	GAA	GAT	GAC	GAT	GAT	GTC	144
W	I	K	M	L	E	E	A	K	S	D	V	K	Q	E	P	64
TGG	ATC	AAG	ATG	CTT	GAA	GAA	GCC	AAA	TCC	GAT	GTT	AAA	CAA	GAA	CCC	192
I	L	S	N	Y	Y	Y	A	S	I	T	S	H	R	S	L	80
ATT	TTA	TCA	AAC	TAC	TAC	TAC	GCT	TCG	ATC	ACA	TCT	CAT	CGA	TCT	TTA	240
E	S	A	L	A	H	I	L	S	V	K	L	S	N	L	N	96
GAG	TCT	GCT	TTA	GCT	CAC	ATC	CTC	TCC	GTA	AAG	CTC	AGC	AAT	TTA	AAC	288
L	P	S	N	T	L	F	E	L	F	I	S	V	L	E	E	112
CTA	CCA	AGC	AAC	ACA	CTC	TTC	GAA	CTG	TTC	ATA	AGC	GTT	TTA	GAA	GAA	336
S	P	E	I	I	E	S	T	K	Q	D	L	I	A	V	K	128
AGC	CCT	GAG	ATC	ATC	GAA	TCC	ACG	AAG	CAA	GAT	CTT	ATA	GCA	GTC	AAA	384
E	R	D	P	A	C	I	S	Y	V	H	C	F	L	G	F	144
GAA	AGA	GAC	CCA	GCT	TGT	ATA	AGC	TAC	GTT	CAT	TGC	TTC	TTG	GGC	TTT	432
K	G	F	L	A	C	Q	A	H	R	I	A	H	T	L	W	160
AAA	GGC	TTC	CTC	GCT	TGT	CAA	GCT	CAT	CGA	ATA	GCT	CAT	ACC	CTC	TGG	480
K	Q	N	R	K	I	V	A	L	L	I	Q	N	R	V	S	176
AAA	CAG	AAC	AGA	AAA	ATC	GTA	GCT	TTA	TTG	ATC	CAA	AAC	AGA	GTA	TCA	528
E	S	F	A	V	D	I	H	P	G	A	K	I	G	K	G	192
GAA	TCT	TTC	GCC	GTC	GAT	ATT	CAT	CCC	GGA	GCG	AAG	ATC	GGA	AAA	GGG	576
I	L	L	D	H	A	T	G	V	V	I	G	E	T	A	V	208
ATT	CTT	TTA	GAC	CAT	GCG	ACG	GGC	GTG	GTG	ATC	GGA	GAG	ACG	GCG	GTG	624
V	G	D	N	V	S	I	L	H	G	V	T	L	G	G	T	224
GTT	GGA	GAC	AAT	GTT	TCG	ATT	CTA	CAC	GGA	GTG	ACC	TTG	GGA	GGA	ACA	672
G	K	Q	S	G	D	R	H	P	K	I	G	D	G	V	L	240
GGG	AAA	CAG	AGT	GGT	GAT	CGG	CAT	CCG	AAG	ATT	GGT	GAT	GGT	GTG	TTG	720
I	G	A	G	S	C	I	L	G	N	I	T	I	G	E	G	256
ATT	GGA	GCT	GGG	AGT	TGT	ATA	TTG	GGG	AAT	ATA	ACA	ATC	GGT	GAG	GGA	768
A	K	I	G	S	G	S	V	V	V	K	D	V	P	A	R	272
GCT	AAG	ATT	GGA	TCA	GGG	TCG	GTG	GTG	GTT	AAG	GAT	GTG	CCG	GCG	CGT	816
T	T	A	V	G	N	P	A	R	L	I	G	G	K	E	N	288
ACG	ACG	GCG	GTT	GGA	AAT	CCG	GCG	AGG	TTG	ATT	GGT	GGG	AAA	GAG	AAT	864
P	R	K	H	D	K	I	P	C	L	T	M	D	Q	T	S	304
CCG	AGA	AAA	CAT	GAT	AAG	ATT	CCT	TGT	CTG	ACT	ATG	GAC	CAG	ACA	TCG	912
Y	L	T	E	W	S	D	Y	V	I							314
TAT	TTA	ACC	GAG	TGG	TCT	GAT	TAT	GTG	ATT	TAA						945

Figure 4: Nucleotide and protein sequences of the SAT3 (L34076) isoform from *A. thaliana*



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		M	P	P	A	G	E	L	R	H	Q	S	P	S	K	14	
		ATG	CCA	CCG	GCC	GGA	GAA	CTC	CGA	CAT	CAA	TCT	CCA	TCA	AAG	42	
E	K	L	S	S	V	T	Q	S	D	E	A	E	A	A	S	30	
GAG	AAA	CTA	TCT	TCC	GTT	ACC	CAA	TCC	GAT	GAA	GCA	GAA	GCA	GCG	TCA	90	
A	A	I	S	A	A	A	A	D	A	E	A	A	G	L	W	46	
GCA	GCG	ATA	TCT	GCG	GCA	GCT	GCA	GAT	GCG	GAA	GCT	GCC	GGA	TTA	TGG	138	
T	Q	I	K	A	E	A	R	R	D	A	E	A	E	P	A	62	
ACA	CAG	ATC	AAG	GCG	GAA	GCT	CGC	CGT	GAT	GCT	GAG	GCG	GAG	CCA	GCT	186	
L	A	S	Y	L	Y	S	T	I	L	S	H	S	S	L	E	78	
TTA	GCT	AGC	TAT	CTA	TAT	TCG	ACG	ATT	CTT	TCT	CAT	TCG	TCT	CTT	GAA	234	
R	S	I	S	F	H	L	G	N	K	L	C	S	S	T	L	94	
CGA	TCT	ATC	TCG	TTT	CAT	CTA	GGA	AAC	AAG	CTT	TGT	TCC	TCA	ACG	CTT	282	
L	S	T	L	L	Y	D	L	F	L	N	T	F	S	S	D	110	
TTA	TCC	ACA	CTT	TTA	TAC	GAT	CTG	TTC	TTA	AAC	ACT	TTT	TCC	TCC	GAT	330	
P	S	L	R	N	A	T	V	A	D	L	R	A	A	R	V	126	
CCT	TCT	CTT	CGT	AAC	GCC	ACC	GTC	GCA	GAT	CTA	CGC	GCT	GCT	CGT	GTT	378	
R	D	P	A	C	I	S	F	S	H	C	L	L	N	Y	K	142	
CGT	GAT	CCT	GCT	TGT	ATC	TCG	TTC	TCT	CAT	TGT	CTC	CTC	AAT	TAC	AAA	426	
G	F	L	A	I	Q	A	H	R	V	S	H	K	L	W	T	158	
GGC	TTC	TTA	GCT	ATT	CAG	GCG	CAT	CGT	GTA	TCA	CAC	AAG	CTA	TGG	ACA	474	
Q	S	R	K	P	L	A	L	A	L	H	S	R	I	S	D	174	
CAA	TCA	CGG	AAG	CCA	TTA	GCA	TTA	GCT	CTA	CAC	TCA	AGA	ATC	TCC	GAT	522	
V	F	A	V	D	I	H	P	A	A	K	I	G	K	G	I	190	
GTA	TTC	GCT	GTT	GAT	ATC	CAT	CCA	GCA	GCG	AAG	ATC	GGA	AAA	GGG	ATA	570	
L	L	D	H	A	T	G	V	V	V	G	E	T	A	V	I	206	
CTT	CTA	GAC	CAC	GCA	ACC	GGA	GTT	GTA	GTC	GGA	GAA	ACA	GCG	GTG	ATT	618	
G	N	N	V	S	I	L	H	H	V	T	L	G	G	T	G	222	
GGG	AAC	AAT	GTT	TCA	ATC	CTT	CAC	CAT	GTG	ACA	CTA	GGT	GGA	ACA	GGT	666	
K	A	C	G	D	R	H	P	K	I	G	D	G	C	L	I	238	
AAA	GCT	TGT	GGA	GAT	AGA	CAT	CCG	AAG	ATC	GGT	GAC	GGT	TGT	TTG	ATT	714	
G	A	G	A	T	I	L	G	N	V	K	I	G	A	G	A	254	
GGA	GCT	GGA	GCG	ACT	ATT	CTT	GGA	AAT	GTG	AAG	ATT	GGT	GCA	GGT	GCT	762	
K	V	G	A	G	S	V	V	L	I	D	V	P	C	R	G	270	
AAA	GTA	GGA	GCT	GGT	TCT	GTT	GTG	CTG	ATT	GAC	GTG	CCT	TGT	CGA	GGT	810	
T	A	V	G	N	P	A	R	L	V	G	G	K	E	K	P	286	
ACT	GCG	GTT	GGG	AAT	CCG	GCG	AGA	CTT	GTC	GGA	GGG	AAA	GAG	AAG	CCA	858	
T	I	H	D	E	E	C	P	G	E	S	M	D	H	T	S	302	
ACG	ATT	CAT	GAT	GAG	GAA	TGT	CCT	GGA	GAA	TCG	ATG	GAT	CAT	ACT	TCA	906	
F	I	S	E	W	S	D	Y	I	I...							312	
TTC	ATC	TCG	GAA	TGG	TCA	GAT	TAC	ATC	ATA	TAA						939	

Figure 5: Nucleotide and protein sequences of the SAT3' (U30298) isoform from *A. thaliana*



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M	A	A	C	I	D	T	C	R	T	G	K	P	Q	I	15
ATG	GCT	GCG	TGC	ATC	GAC	ACC	TGC	CGC	ACT	GGT	AAA	CCC	CAG	ATT	45
S	P	R	D	S	S	K	H	H	D	D	E	S	G	F	30
TCT	CCT	CGC	GAT	TCT	TCT	AAA	CAC	CAC	GAC	GAT	GAA	TCT	GGC	TTT	90
R	Y	M	N	Y	F	R	Y	P	D	R	S	S	F	N	45
CGT	TAC	ATG	AAC	TAC	TTC	CGT	TAT	CCT	GAT	CGA	TCT	TCC	TTC	AAT	135
G	T	Q	T	K	T	L	H	T	R	P	L	L	E	D	60
GGA	ACC	CAG	ACC	AAA	ACC	CTC	CAT	ACT	CGT	CCT	TTG	CTT	GAA	GAT	180
L	D	R	D	A	E	V	D	D	V	W	A	K	I	R	75
CTC	GAT	CGC	GAC	GCT	GAA	GTC	GAT	GAT	GTT	TGG	GCC	AAA	ATC	CGA	225
E	E	A	K	S	D	I	A	K	E	P	I	V	S	A	90
GAA	GAG	GCT	AAA	TCT	GAT	ATC	GCC	AAA	GAA	CCT	ATT	GTT	TCC	GCT	270
Y	Y	H	A	S	I	V	S	Q	R	S	L	E	A	A	105
TAT	TAT	CAC	GCT	TCG	ATT	GTT	TCT	CAG	CGT	TCG	TTG	GAA	GCT	CGC	315
L	A	N	T	L	S	V	K	L	S	N	L	N	L	P	120
TTG	GCG	AAT	ACT	TTA	TCT	GTT	AAA	CTC	AGC	AAT	TTG	AAT	CTT	CCA	360
S	N	T	L	F	D	L	F	S	G	V	L	Q	G	N	135
AGC	AAC	ACG	CTT	TTC	GAT	TTG	TTC	TCT	GGT	GTT	CTT	CAA	GGA	AAC	405
P	D	I	V	E	S	V	K	L	D	L	L	A	V	K	150
CCA	GAT	ATT	GTT	GAA	TCT	GTC	AAG	CTA	GAT	CTT	TTA	GCT	GTT	AAG	450
E	R	D	P	A	C	I	S	Y	V	H	C	F	L	H	165
GAG	AGA	GAT	CCT	GCT	TGT	ATA	AGC	TAC	GTT	CAT	TGT	TTC	CTT	CAC	495
F	K	G	F	L	A	C	Q	A	H	R	I	A	H	E	180
TTT	AAA	GGC	TTC	CTC	GCT	TGT	CAA	GCG	CAT	CGT	ATT	GCT	CAT	GAG	540
L	W	T	Q	D	R	K	I	L	A	L	L	I	Q	N	195
CTT	TGG	ACT	CAG	GAC	AGA	AAA	ATC	CTA	GCT	TTG	TTG	ATC	CAG	AAC	585
R	V	S	E	A	F	A	V	D	F	H	P	G	A	K	210
AGA	GTC	TCT	GAA	GCC	TTC	GCT	GTT	GAT	TTC	CAC	CCT	GGA	GCT	AAA	630
I	G	T	G	I	L	L	D	H	A	T	A	I	V	I	225
ATC	GGT	ACC	GGG	ATT	TTG	CTA	GAC	CAT	GCT	ACG	GCT	ATT	GTG	ATC	675
G	E	T	A	V	V	G	N	N	V	S	I	L	H	N	240
GGT	GAG	ACG	GCG	GTT	GTG	GGG	AAC	AAT	GTT	TCG	ATT	CTC	CAT	AAC	720
V	T	L	G	G	T	G	K	Q	C	G	D	R	H	P	255
GTT	ACG	CTT	GGA	GGA	ACG	GGG	AAA	CAG	TGT	GGA	GAT	AGG	CAC	CCG	765
K	I	G	D	G	V	L	I	G	A	G	T	C	I	L	270
AAG	ATT	GGC	GAT	GGG	GTT	TTG	ATT	GGA	GCT	GGG	ACT	TGT	ATT	TTG	810
G	N	I	T	I	G	E	G	A	K	I	G	A	G	S	285
GGG	AAT	ATC	ACG	ATT	GGT	GAA	GGA	GCT	AAG	ATT	GGT	GCG	GGG	TCG	855
V	V	L	K	D	V	P	P	R	T	T	A	V	G	N	300
GTG	GTG	TTG	AAA	GAC	GTG	CCG	CCG	CGT	ACG	ACG	GCT	GTT	GGA	AAT	900
P	A	R	L	L	G	G	K	D	N	P	K	T	H	D	315
CCG	GCG	AGG	TTG	CTT	GGT	GGT	AAA	GAT	AAT	CCG	AAA	ACG	CAT	GAC	945
K	I	P	G	L	T	M	D	Q	T	S	H	I	S	E	330
AAG	ATT	CCT	GGT	TTG	ACT	ATG	GAC	CAG	ACG	TCG	CAT	ATA	TCC	GAG	990
W	S	D	Y	V	I										336
TGG	TCG	GAT	TAT	GTA	ATT	TGA									1011

Figure 6: Nucleotide and protein sequences of the SAT 1' (L78443) isoform from *A. thaliana*.



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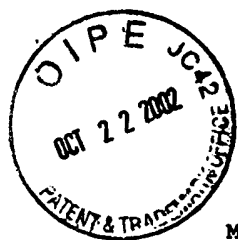
					M	L	P	V	T	S	R	R	H	F		
					ATG	TTG	CCG	GTC	ACA	AGT	CGC	CGC	CAC	TTC	30	
T	M	S	L	Y	M	L	R	S	S	S	P	H	I	N		
ACA	ATG	TCC	CTA	TAT	ATG	CTC	CGT	TCA	TCT	TCT	CCA	CAC	ATC	AAT	75	
H	H	S	F	L	L	P	S	F	V	S	S	K	F	K	40	
CAT	CAC	TCT	TTC	CTT	CTT	CCT	TCT	TTT	GTT	TCC	TCC	AAA	TTC	AAA	120	
H	H	T	L	S	P	P	P	S	P	P	P	P	P	P	55	
CAC	CAT	ACT	TTA	TCT	CCT	CCT	CCT	TCT	CCT	CCT	CCT	CCT	CCT	CCT	165	
M	A	A	C	I	D	T	C	R	T	G	K	P	Q	I	70	
ATG	GCT	GCG	TGC	ATC	GAC	ACC	TGC	CGC	ACT	GGT	AAA	CCC	CAG	ATT	210	
S	P	R	D	S	S	K	H	H	D	D	E	S	G	F	85	
TCT	CCT	CGC	GAT	TCT	TCT	AAA	CAC	CAC	GAC	GAT	GAA	TCT	GGC	TTT	255	
R	Y	M	N	Y	F	R	Y	P	D	R	S	S	F	N	100	
CGT	TAC	ATG	AAC	TAC	TTC	CGT	TAT	CCT	GAT	CGA	TCT	TCC	TTC	AAT	300	
G	T	Q	T	K	T	L	H	T	R	P	L	L	E	D	115	
GGA	ACC	CAG	ACC	AAA	ACC	CTC	CAT	ACT	CGT	CCT	TTG	CTT	GAA	GAT	345	
L	D	R	D	A	E	V	D	D	V	W	A	K	I	R	130	
CTC	GAT	CGC	GAC	GCT	GAA	GTC	GAT	GAT	GTT	TGG	GCC	AAA	ATC	CGA	390	
E	E	A	K	S	D	I	A	K	E	P	I	V	S	A	145	
GAA	GAG	GCT	AAA	TCT	GAT	ATC	GCC	AAA	GAA	CCT	ATT	GTT	TCC	GCT	435	
Y	Y	H	A	S	I	V	S	Q	R	S	L	E	A	A	160	
TAT	TAT	CAC	GCT	TCG	ATT	GTT	TCT	CAG	CGT	TCG	TTG	GAA	GCT	GCG	480	
L	A	N	T	L	S	V	K	L	S	N	L	N	L	P	175	
TTG	GCG	AAT	ACT	TTA	TCT	GTT	AAA	CTC	AGC	AAT	TTG	AAT	CTT	CCA	525	
S	N	T	L	F	D	L	F	S	G	V	L	Q	G	N	190	
AGC	AAC	ACG	CTT	TTC	GAT	TTG	TTC	TCT	GGT	GTT	CTT	CAA	GGA	AAC	570	
P	D	I	V	E	S	V	K	L	D	L	L	A	V	K	205	
CCA	GAT	ATT	GTT	GAA	TCT	GTC	AAG	CTA	GAT	CTT	TTA	GCT	GTT	AAG	615	
E	R	D	P	A	C	I	S	Y	V	H	C	F	L	H	220	
GAG	AGA	GAT	CCT	GCT	TGT	ATA	AGC	TAC	GTT	CAT	TGT	TTC	CTT	CAC	660	
F	K	G	F	L	A	C	Q	A	H	R	I	A	H	E	235	
TTT	AAA	GGC	TTC	CTC	GCT	TGT	CAA	GCG	CAT	CGT	ATT	GCT	CAT	GAG	705	
L	W	T	Q	D	R	K	I	L	A	L	L	I	Q	N	250	
CTT	TGG	ACT	CAG	GAC	AGA	AAA	ATC	CTA	GCT	TTG	TTG	ATC	CAG	AAC	750	
R	V	S	E	A	F	A	V	D	F	H	P	G	A	K	265	
AGA	GTC	TCT	GAA	GCC	TTC	GCT	GTT	GAT	TTC	CAC	CCT	GGA	GCT	AAA	795	
I	G	T	G	I	L	L	D	H	A	T	A	I	V	I	280	
ATC	GGT	ACC	GGG	ATT	TTG	CTA	GAC	CAT	GCT	ACG	GCT	ATT	GTG	ATC	840	
G	E	T	A	V	V	G	N	N	V	S	I	L	H	N	295	
GGT	GAG	ACG	GCG	GTT	GTG	GGG	AAC	AAT	GTT	TCG	ATT	CTC	CAT	AAC	885	
V	T	L	G	G	T	G	K	Q	C	G	D	R	H	P	310	
GTT	ACG	CTT	GGA	GGA	ACG	GGG	AAA	CAG	TGT	GGA	GAT	AGG	CAC	CCG	930	
K	I	G	D	G	V	L	I	G	A	G	T	C	I	L	325	
AAG	ATT	GGC	GAT	GGG	GTT	TTG	ATT	GGA	GCT	GGG	ACT	TGT	ATT	TTG	975	
G	N	I	T	I	G	E	G	A	K	I	G	A	G	S	340	
GGG	AAT	ATC	ACG	ATT	GGT	GAA	GGA	GCT	AAG	ATT	GGT	GCG	GGG	TCG	1020	
V	V	L	K	D	V	P	P	R	T	T	A	V	G	N	355	
GTG	GTG	TTG	AAA	GAC	GTG	CCG	CCG	CGT	ACG	ACG	GCT	GTT	GGA	AAT	1065	
P	A	R	L	L	G	G	K	D	N	P	K	T	H	D	370	
CCG	GCG	AGG	TTG	CTT	GGT	GGT	AAA	GAT	AAT	CCG	AAA	ACG	CAT	GAC	1110	
K	I	P	G	L	T	M	D	Q	T	S	H	I	S	E	385	
AAG	ATT	CCT	GGT	TTG	ACT	ATG	GAC	CAG	ACG	TCG	CAT	ATA	TCC	GAG	1155	
W	S	D	Y	V	I										391	
TGG	TCG	GAT	TAT	GTA	ATT	TGA									1176	

Figure 7 : Nucleotide and protein sequences of the SAT 1 (U 22964) isoform from *A. thaliana*



M	V	D	L	S	S	F	S	L	L	F	A	F	S	V	S	
ATG	GTG	GAT	CTA	TCT	TCC	TTT	AGC	CTC	CTT	TTT	GCT	TTC	TCC	GTC	TCT	16
L	S	F	V	Q	S	K	R	V	C	D	S	S	L	S	S	48
CTC	TCT	TTT	GTC	CAA	TCA	AAA	AGA	GTT	TGT	GAT	TCT	TCT	TTA	TCG	TCT	96
P	W	R	D	M	N	G	D	E	L	P	F	E	S	G	F	48
CCT	TGG	AGA	GAT	ATG	AAT	GGC	GAT	GAG	CTT	CCT	TTC	GAG	AGT	GGT	TTC	144
E	V	Y	A	K	G	T	H	K	S	E	F	D	S	N	L	64
GAG	GTT	TAC	GCT	AAG	GGA	ACT	CAT	AAG	TCA	GAG	TTT	GAC	TCG	AAT	TTG	192
L	D	P	R	S	D	P	I	W	D	A	I	R	E	E	A	80
CTT	GAT	CCT	CGT	TCT	GAT	CCT	ATT	TGG	GAT	GCT	ATA	AGA	GAA	GAA	GCT	240
K	L	E	A	E	K	E	P	I	L	S	S	F	L	Y	A	96
AAA	CTT	GAG	GCA	GAG	AAA	GAG	CCT	ATT	TTG	AGT	AGC	TTC	TTG	TAT	GCT	288
G	I	L	A	H	D	C	L	E	Q	A	L	G	F	V	L	112
GGT	ATC	TTA	GCA	CAT	GAT	TGT	TTA	GAG	CAA	GCT	TTA	GGG	TTT	GTT	CTA	336
A	N	R	L	Q	N	P	T	L	L	A	T	Q	L	L	D	128
GCC	AAC	CGT	CTC	CAA	AAC	CCA	ACC	TTG	TTG	GCA	ACA	CAA	CTC	TTG	GAT	384
I	P	Y	G	V	M	M	H	D	K	G	I	Q	S	S	I	144
ATA	TTT	TAT	GGT	GTT	ATG	ATG	CAT	GAC	AAA	GGT	ATT	CAG	AGT	TCG	ATT	432
R	H	D	L	Q	A	F	K	D	R	D	P	A	C	L	S	160
CGC	CAT	GAT	CTC	CAG	GCA	TTT	AAA	GAT	CGT	GAT	CCT	GCT	TGT	CTG	TCG	480
Y	S	S	A	I	L	H	L	K	G	Y	H	A	L	Q	A	176
TAT	AGT	TCT	GCT	ATT	TTA	CAT	CTG	AAG	GGT	TAT	CAT	GCG	TTA	CAA	GCA	528
Y	R	V	A	H	K	L	W	N	E	G	R	K	L	L	A	192
TAT	AGG	GTT	GCG	CAT	AAA	CTG	TGG	AAT	GAA	GGG	AGG	AAA	CTA	TTA	GCT	576
L	A	L	Q	S	R	I	S	E	V	F	G	I	D	I	H	208
CTT	GCA	TTG	CAA	AGC	CGA	ATA	AGC	GAG	GTT	TTT	GGC	ATT	GAC	ATA	CAT	624
P	A	A	R	I	G	E	G	I	L	L	D	H	G	T	G	224
CCA	GCG	GCA	AGA	ATT	GGG	GAG	GGA	ATA	TTG	TTG	GAT	CAT	GGA	ACT	GGA	672
V	V	I	G	E	T	A	V	I	G	N	G	V	S	I	L	240
GTG	GTC	ATT	GGT	GAG	ACC	GCT	GTG	ATA	GGC	AAC	GGT	GTC	TCG	ATC	TTA	720
H	G	V	T	L	G	G	T	G	K	E	T	G	D	R	H	256
CAT	GGT	GTG	ACT	TTA	GGA	GGA	ACC	GGA	AAG	GAA	ACT	GGC	GAT	CGC	CAC	768
P	K	I	G	E	G	A	L	L	G	A	C	V	T	I	L	272
CCA	AAG	ATA	GGT	GAA	GGT	GCA	TTG	CTT	GGA	GCT	TGT	GTG	ACT	ATA	CTT	816
G	N	I	S	I	G	A	G	A	M	V	A	A	G	S	L	288
GGT	AAC	ATA	AGC	ATA	GGT	GCT	GGA	GCA	ATG	GTA	GCT	GCA	GGT	TCA	CTT	864
V	L	K	D	V	P	S	H	S	V	V	A	G	N	P	A	304
GTG	TTA	AAA	GAC	GTT	CCT	TCG	CAT	AGT	GTG	GTG	GCT	GGA	AAT	CCT	GCA	912
K	L	I	R	V	M	E	E	Q	D	P	S	L	A	M	K	320
AAA	CTG	ATC	AGG	GTC	ATG	GAA	GAG	CAA	GAC	CCG	TCT	CTA	GCA	ATG	AAA	960
H	D	A	T	K	E	F	F	R	H	V	A	D	G	Y	K	336
CAC	GAT	GCT	ACT	AAA	GAG	TTT	CGA	CAT	GTA	GCT	GAT	GGT	TAC	AAA		1008
G	A	Q	S	N	G	P	S	L	S	A	G	D	T	E	K	352
GGG	GCA	CAA	TCT	AAC	GGA	CCA	TCA	CTT	TCA	GCA	GGA	GAT	ACA	GAG	AAA	1056
G	H	T	N	S	T	S										359
GGA	CAC	ACT	AAC	AGC	ACA	TCA	TGA									1104

Figure 8: Nucleotide and protein sequences from mRNA of the putative chloroplast serine acetyltransferase SAT2 from *Arabidopsis thaliana* (L78444)



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M	A	C	I	N	G	E	N	R	D	F	S	S	S	S		15
ATG	GCT	TGT	ATA	AAC	GGC	GAG	AAT	CGT	GAT	TTT	TCT	TCC	TCG	TCA		45
S	L	S	S	L	P	M	I	V	S	R	N	F	S	A		30
TCT	TTG	TCT	TCT	CTT	CCA	ATG	ATT	GTC	TCC	CGG	AAC	TTT	TCT	GCC		90
R	D	D	G	E	T	G	D	E	F	P	F	E	R	I		45
AGA	GAC	GAT	GGA	GAG	ACC	GGT	GAC	GAG	TTT	CCT	TTC	GAG	AGG	ATT		135
F	P	V	Y	A	R	G	T	L	N	P	V	A	D	P		60
TTC	CCG	GTT	TAC	GCT	AGA	GGA	ACC	CTT	AAT	CCC	GTG	GCC	GAC	CCG		180
V	L	L	D	F	T	N	S	S	Y	D	P	I	W	D		75
GTT	TTG	CTG	GAT	TTT	ACC	AAT	TCT	AGT	TAT	GAC	CCA	ATT	TGG	GAT		225
S	I	R	E	E	A	K	L	E	A	E	E	E	P	V		90
TCT	ATA	AGA	GAA	GAA	GCT	AAG	CTT	GAG	GCA	GAA	GAG	GAG	CCG	GTT		270
L	S	S	F	L	Y	A	S	I	L	S	H	D	C	L		105
TTG	AGT	AGC	TTC	TTG	TAT	GCT	AGT	ATC	TTG	TCG	CAT	GAC	TGT	TTA		315
E	Q	A	L	S	F	V	L	A	N	R	L	Q	N	P		120
GAG	CAA	GCA	TTG	AGT	TTT	GTT	CTA	GCT	AAC	CGT	CTC	CAA	AAC	CCT		360
T	L	L	A	T	Q	L	M	D	I	F	C	N	V	M		135
ACC	TTG	TTG	GCA	ACT	CAG	CTT	ATG	GAT	ATA	TTT	TGC	AAC	GTT	ATG		405
V	H	D	R	G	I	Q	S	S	I	R	L	D	V	Q		150
GTA	CAT	GAC	AGA	GGT	ATT	CAA	AGC	TCG	ATT	CGT	CTT	GAT	GTT	CAG		450
A	F	K	D	R	D	P	A	C	L	S	Y	S	S	A		165
GCA	TTC	AAA	GAC	AGA	GAT	CCT	GCT	TGT	CTA	TCG	TAT	AGT	TCG	GCT		495
I	L	H	L	K	G	Y	L	A	L	Q	A	Y	R	V		180
ATT	TTA	CAT	CTG	AAG	GGC	TAT	CTT	GCA	CTG	CAG	GCG	TAT	AGA	GTA		540
A	H	K	L	W	K	Q	G	R	K	L	L	A	L	A		195
GCA	CAT	AAG	TTG	TGG	AAG	CAA	GGA	AGA	AAA	CTA	TTA	GCA	TTG	GCA		585
L	Q	S	R	V	S	E	V	R	T	A	V	I	G	D		210
CTG	CAA	AGC	CGA	GTA	AGC	GAG	GTA	AGA	ACT	GCT	GTG	ATA	GGC	GAC		630
R	V	S	I	L	H	G	V	T	L	G	G	T	G	K		225
CGT	GTC	TCA	ATT	TTG	CAT	GGT	GTG	ACA	TTA	GGA	GGA	ACT	GGG	AAA		675
E	T	G	D	R	H	P	N	I	G	D	G	A	L	L		240
GAA	ACC	GGT	GAC	CGC	CAT	CCA	AAT	ATA	GGC	GAC	GGT	GCT	CTT	CTT		720
G	A	C	V	T	I	L	G	N	I	K	I	G	A	G		255
GGA	GCA	TGT	GTG	ACT	ATA	CTT	GGT	AAC	ATT	AAG	ATA	GGC	GCT	GGA		765
A	M	V	A	A	G	S	L	V	L	K	D	V	P	S		270
GCA	ATG	GTA	GCT	GCT	GGT	TCG	CTT	GTG	TTA	AAG	GAT	GTT	CCT	TCG		810
H	S	M	V	A	G	N	P	A	K	L	I	G	F	V		285
CAT	AGC	ATG	GTG	GCT	GGA	AAT	CCA	GCA	AAA	CTC	ATC	GGG	TTT	GTT		855
D	E	Q	D	P	S	M	T	M	E	H	G	E	S			299
GAT	GAG	CAA	GAT	CCA	TCT	ATG	ACA	ATG	GAG	CAT	GGT	GAG	TCT	TGA		900

Figure 9: Nucleotide and amino acid sequences from mRNA of the putative chloroplast SAT4 from *Arabidopsis thaliana*

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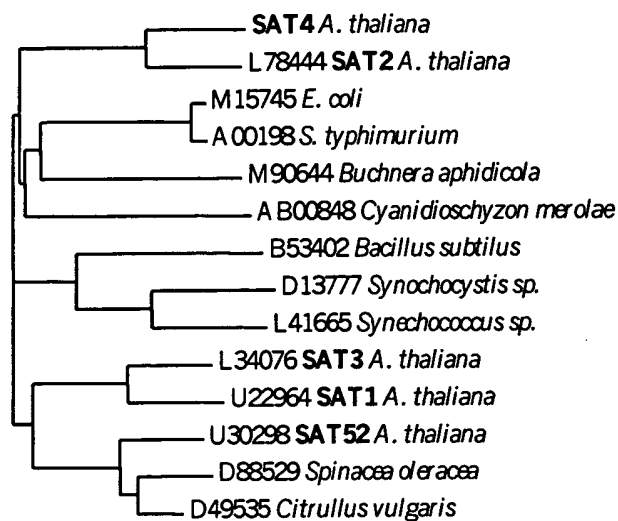


Figure 10 Sequence comparison of serine acetyltransferases from *A. thaliana* and other organisms

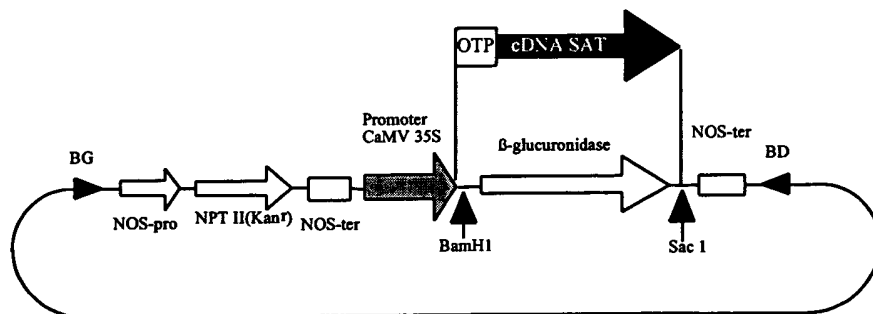


Figure 11: Process for insertion of OTP/serine acetyltransferase SAT3 or cysteine-insensitive SAT such as truncated SAT1 in the vector pBI121

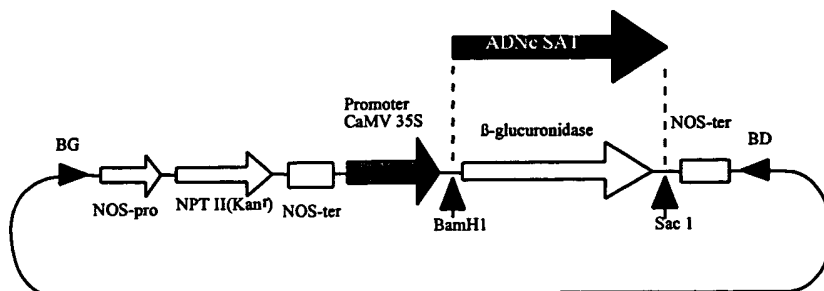
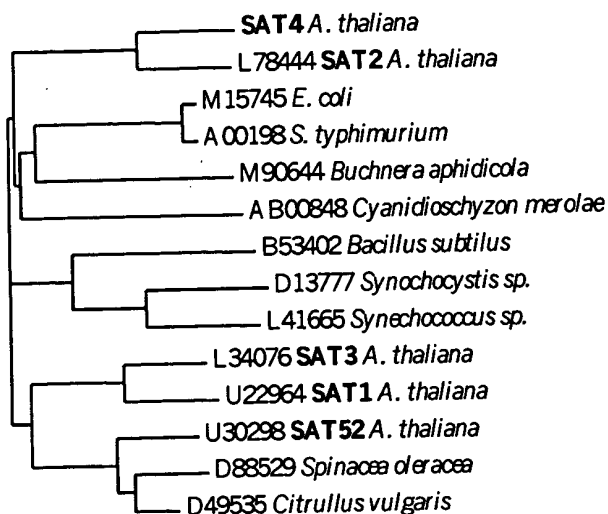


Figure 12: Process for insertion of serine acetyltransferase SAT1', SAT1, SAT2, SAT3, SAT3', SAT4 or any SAT in the vector pBI121

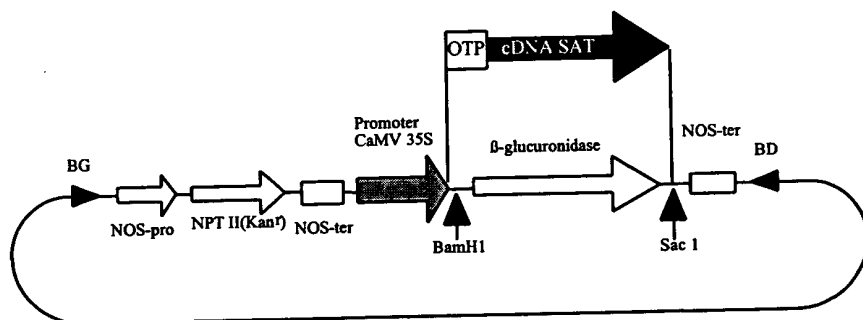




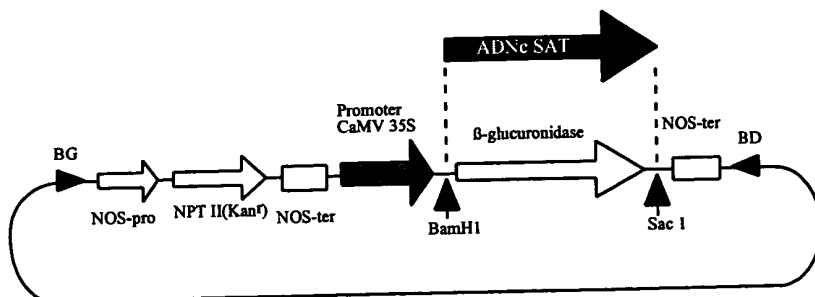
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**Figure 10** Sequence comparison of serine acetyltransferases from *A. thaliana* and other organisms



**Figure 11:** Process for insertion of OTP/serine acetyltransferase SAT3 or cysteine-insensitive SAT such as truncated SAT1 in the vector pBI121



**Figure 12:** Process for insertion of serine acetyltransferase SAT1', SAT1, SAT2, SAT3, SAT3', SAT4 or any SAT in the vector pBI121